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16. Abstract <p>Lane drops downstream of signalized intersections are found on many urban and suburban streets and highways. Since drivers tend to avoid using the short lane due to the potential for stressful merges downstream of the signal, the short lane is typically under-utilized. Previous research indicates that the default lane utilization factors in the Highway Capacity Manual (HCM) appear to overestimate traffic in the short lane. The purpose of this project was to develop models to predict lane utilization factors for six defined intersection types and to assess how a lane drop affects safety near intersections.</p> <p>Traffic, signal, and collision data were collected at 94 sites in North Carolina. Based on 15 candidate factors, multiple regression models were developed for the purpose of predicting the lane utilization factor. This study found that the downstream lane length and traffic intensity positively correlate with the lane utilization factor, and that some geometric variables at the approach may also influence lane utilization. Collision data analysis results show that collision rates downstream of an intersection decline as the distance to a lane drop increase. The results also show that the lane drop type does not affect collision rates upstream and downstream of intersections.</p> <p>Many of the results derived from this study are consistent with previous research. The models developed should provide designers and traffic engineers with concrete methods to improve lane utilization when lane drops are contemplated.</p> <p>A re-assessment of the effect of lane utilization on capacity is recommended, since models in the HCM consistently overestimate delay for all types of lane drop intersections with low lane utilization.</p>			
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